DOCUMENT RESUME

ED 303 952 EC 212 149

AUTHOR Bryant, Dale; And Others
TITLE Research Institute for the Study of Learning Disabilities: Final Report (1980-83).
INSTITUTION Columbia Univ., New York, N.Y. Research Inst. for the Study of Learning Disabilities.
SPONS AGENCY Bureau of Education for the Handicapped (ED), Washington, D.C.
PUB DATE 30 Sep 83
CONTRACT 300-80-0620
NOTE 67p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Arithmetic; *Cognitive Processes; Elementary Secondary Education; Higher Education; *Learning Disabilities; *Learning Strategies; Memory; Reader Text Relationship; Reading Comprehension; Reading Instruction; Research and Development Centers; Research Problems; *Research Projects; Spelling Instruction; Study Skills; *Teaching Methods

ABSTRACT

The Research Institute for the Study of Learning Disabilities, established at Teachers College, Columbia University, was guided by the postulation that academic failure experienced by learning-disabled children results from interaction between the way they process information and the information processing demands of the instructional methods employed in their classrooms. Institute goals were to investigate the nature of these information processing deficits, to develop effective instruction for learning-disabled children, and to develop measures based on performance on standardized learning tasks which contribute to an operational definition of learning disabilities. Two approaches were taken toward achievement of the goals: manipulating instruction to circumvent information processing deficits, and teaching learning-disabled children more efficient and effective information-processing strategies. Principal areas of investigation were deliberate memory and study skills, arithmetic, basic reading and spelling, reading comprehension, interaction of characteristics of the text and the reader, and semantic reading and schema application in reading comprehension. Results of the research have been presented in technical reports, journal articles, teachers' manuals, lesson plans, and instructional units. Publications include manuals for teaching reading, spelling, arithmetic, problem-solving, study skills, and so on. This final report of the Institute outlines its organization, major findings, problems, and dissemination activities. (JDD)

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EC 212149

RESEARCH INSTITUTE FOR THE STUDY OF LEARNING DISABILITIES

Teachers College, Columbia University
New York, New York 10027

FINAL REPORT

(1980 - 1983)

OE/BEH Contract Number 300-80-0620
(Research Institutes for Programs of Research
in the Education of Learning Disabled Children)

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September 30, 1983

Submitted through the Research and Demonstration Center for the
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INTRODUCTION

The Institute for the Study of Learning Disabilities as proposed in 1980 was designed to investigate the nature of the difficulties learning disabled (LD) children encounter in information processing. It was postulated that academic failure experienced by LD children results from interaction between the way they process information and the information processing demands of the instructional methods employed in their classrooms. The Institute's productivity is evidenced in the progress it made through a) conceptualizing learning disabilities in terms of the school's specific academic expectations, b) developing, adapting and evaluating teaching methods and materials for LD children in each basic skills component and, c) contributing to the development of a yet-to-be finalized theoretical model which will conceptualize learning disabilities as they appear in the dynamics of a classroom situation. Not until there is consensus on this model will an operational definition of learning disabilities be possible.

Research Focus

The Institute examined the nature of information processing difficulties experienced by children with learning disabilities and, through its task forces which focused on specific academic skills areas, has devised instructional approaches based upon the findings of its research. Since school failure is related to the dynamics of a classroom situation, there appeared to be two options for remedial instruction. The Institute explored both options. In one, the variables in instructional methods were manipulated to make the teaching more effective and efficient for student learning. The other option called for direct focus on the learning disabled child who was

to be taught to use effective and efficient strategies in order to process the information to be mastered for success in the classroom. Some studies tested the effects of instructional manipulations on LD children's performance on academic tasks. From this research, some accurate descriptions of information processing deficits associated with LD children have been obtained and some instructional approaches have been designed to circumvent or alter the deficits.

The Institute's early information processing work shared the methodological orientation designated as "the instructional approach" to developmental cognitive research. The experiments have been guided by the models of cognition described by Atkinson and Shiffren, 1968; Brown, 1975; Craik and Lockhart, 1972; Newell and Simon, 1972. Much of our research has been influenced by theoretical distinctions between children's cognitive and metacognitive activities, i.e., between their thinking and their knowledge about their own thinking (Brown and DeLoche, 1978).

Most of the study subjects have been groups of children enrolled in elementary schools where they were receiving special education instruction. Some of them attended regular classes and received special education in resource rooms. Others were enrolled in special classes or in special schools.

Institute Goals and Objectives

The research program of the Institute is predicated on the assumption that many of the problems exhibited by learning disabled children arise because of the difficulties they manifest in processing information. It was assumed also that if the initial discrepancies between the performance of LD and non-LD children were eliminated or reduced after specific

instruction that the academic skills which were taught were related to processing differences which fostered the initial deficit.

The Institute staff had a strong conviction that LD children could learn to develop and improve their use of cognitive and metacognitive skills and that the gap between the academic performance of LD and non-LD children could be diminished. The goals of the Institute derived from these postulations were as follows:

1. to investigate the nature of information-processing deficits exhibited by learning disabled children.

2. to develop and evaluate effective instruction for learning disabled children based on investigations of the ways in which the children acquire, store and retrieve information.

3. to develop measures based on performance on standardized learning tasks which can contribute to an operational definition of learning disabilities.

In the process of meeting these goals, the Institute was committed to the production of screening instruments, instructional guides and training packages for teachers, instructional modules, and specific lesson plans. These products were designed for use in differentiating academic performance of LD and Non-LD children, and testing the effectiveness of specially designed instructional materials and methodologies. The products were not intended to serve as definitive curricula for school adoption in the education of LD children; they were, however, to provide guides for direct use by teachers and other specialists as experimental instructional and research resources.

Institute Organization

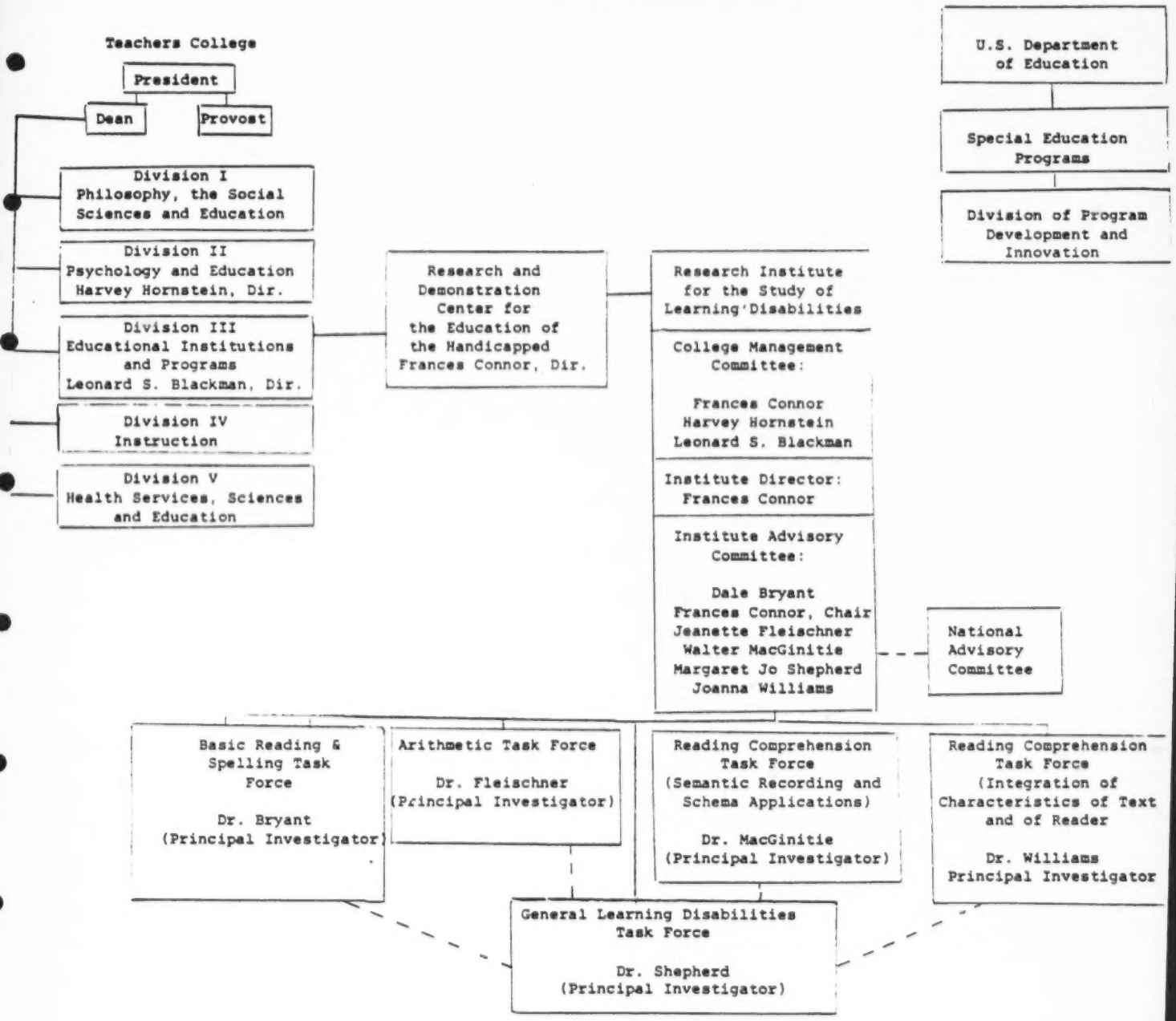
The work of the Institute which has been focused on performance of learning disabled children on academic learning in schools was carried out by five principal investigators. Each principal investigator headed a task force focused on a designated academic skill area which is fundamental to the elementary school curriculum and particularly problemmatic for the learning disabled child. The five task forces and the principal investigators are: General Learning Disabilities: Deliberate Memory and Study Skills (Margaret Jo Shepherd); Arithmetic (Jeannette Fleischner); Basic Reading and Spelling (N. Dale Bryant); Reading Comprehension: Interaction of Characteristics of the Text and the Reader (Joanna Williams); and Reading Comprehension: Semantic Reading and Schema Application (Walter MacGinitie).

The five principal investigators as shown in Figure 1, on the following page, serve as the chief research decision makers and implementators meeting the Institute goals related to their specific skill areas. Their work is interrelated and their findings constitute similarities and differences in the information processing of learning disabled children under a variety of conditions and in the various academic skill areas.

Figure 1. Organizational Plan

Research Institute for the Study of Learning Disabilities

Teachers College, Columbia University



National Advisory Committee

External responsibility for review of and consultation to the Institute's research program was assumed by members of the National Advisory Committee. This Committee met in the early years of the Institute to review research objectives and individual research programs. During the intensive data collection and analysis period, the more productive, efficient, and economical role for these specialists proved to be one of individual consultation and advisement. They served as consultants to particular projects. Membership on this Committee included:

Jeanne Chall, Professor of Education and Director, Reading Laboratory, Graduate School of Education, Harvard University

Martha Denckla, Professor of Neurology, Harvard Medical School

Isabel Lieberman, Professor of Psychology, University of Connecticut

Barbara Keogh, Professor and Chairman of the Department of Special Education, University of California at Los Angeles

George Miller, Professor of Psychology, Rockefeller University

Rita Rudel, Associate Professor of Medical Psychology, Department of Neurology, Columbia University

Robert Thorndike, Professor Emeritus of Psychology and Education, Teachers College, Columbia University

Thomas Trabasso, Professor of Psychology, School of Education, University of Chicago.

Major Findings

The major findings of the Institute research during the six year period are described below.

General Learning Disabilities (Deliberate Memory and Study Skills)

The General Learning Disabilities Task Force conducted studies of learning disabled children's performance when they were asked to learn and recall information. Our work was largely restricted to recall tasks which are used in psychological studies of deliberate memory and are, therefore, called "laboratory tasks". Children were asked to memorize picture names, lists of words and lists of word pairs. We used one task which approximates a task which children might encounter in school; we asked some of the children who worked with us to memorize facts from text. Following a tradition established with studies of memory development among normally developing children, we created situations which allowed us to observe children's actions while they studied the information they were expected to learn and remember. Experimental procedures are available which enabled us to score their recall protocols and made inferences about their actions while they recalled. Usually we asked them to tell us what they did. We were interested in the relationship between study and recall activities and the amount of information recalled. First, we just watched and then we taught.

John Flavell is primarily responsible for the theoretical and experimental orientation of our studies. Drawing on results from investigations of children's performance on recall tasks organized so that study and recall

activities could be observed or inferred, he suggested (1970) that memorizing is a type of problem solving. The problem is to remember everything and resolution of the problem depends upon finding facilitating ways to restructure or otherwise act upon information during study and recall. Drawing again on experimental evidence, obtained with children at different ages, he suggested that children's ability to remember more as they grow older is a joint consequence of increasing awareness that memorizing is a planned, conscious act and the acquisition of a repetoire of memory strategies, i.e., facilitating ways to restructure and act upon information.

This is a simple presentation of a major theoretical statement about memory development which ignores other important contributions to contemporary descriptions of learning and memory (see Brown, Bransford, Ferrara & Campione, 1983) but it serves to focus attention on the reason for our work. This view of memory development suggests that, while some features of memory development may be fixed and immutable, others change as a result of experience and learning. Further, this view of memory development offers a description of those features of memory which change.

The search for the cognitive deficit or deficits responsible for learning disability has, for obvious reasons, consistently (but not exclusively) focused on memory. Investigations of memory with learning disabled children follow two rather different paths. One involves efforts to relate memory deficits to specific academic disabilities, i.e., efforts to understand the way or ways that memory deficits might be implicated in difficulty learning to read (for a discussion of memory deficits which might interfere with learning to read, see Stanovich, 1982). The

other reflects a more general perspective on memory and includes studies which compare the performance of learning disabled and non-disabled children on a variety of experimental tasks designed to assess memory as memory. The impetus for this second group of investigations comes in part from observations and reports about learning disabled children by their families and teachers. Apparently, learning disabled children "forget" a lot of things in addition to number facts and letter sounds, including their home address, their birthday and where they put their shoes last might. It is a fact that children described as learning disabled earn lower scores than non-disabled peers on a variety of experimental tasks designed to assess memory (this statement is based on a review of this literature published several years ago (1975) by Joseph Torgesen).

Our work was an extension of this second approach to the study of memory and learning disability. It built on clinical and empirical evidence that children described as learning disabled have difficulty remembering in situations other than those involving reading, spelling, writing and arithmetic and relied on theory and evidence that learning to use mnemonic strategies is the major developmental achievement in memory. Our work also relied on evidence obtained with young non-disabled children (see review by Waters and Andreassen, 1983) and with mentally retarded individuals (see review by Glidden, 1979) that strategic features of memory can be changed by instruction.

The studies we conducted were an extension of existing research on memory and learning disability in two ways. First we were concerned about process, the way children worked to remember, as well as product, how much they remembered. Second, we were interested in changes in memory performance.

We asked these questions:

-Do learning disabled children use memory strategies?

-Can they learn to use memory strategies?

-Does the use of memory strategies improve their performance on recall tasks?

-Do learning disabled children continue to use a memory strategy which they have been taught after instruction is terminated?

-Will learning disabled children use a memory strategy which they have been taught when they encounter a new task?

It is important to indicate that we did not believe that answers to these questions would contribute to a major theoretical statement about learning disability. In particular, we were aware that our work wasn't directly related to learning to read, write, spell and calculate. We did believe, however, that this was one instance when theoretical and empirical work in developmental psychology could offer guidance for effective intervention with learning disabled children. We thought that we might learn how to teach some learning disabled children to memorize. We believed that there was sufficient evidence that some of them didn't know how to do that.

The findings summarized below are based on studies of two memory strategies: category organization and elaboration. Category organization is a useful memory strategy when information to be remembered can be grouped into concepts (i.e., class, use, etc.). Information is easier to remember if it is grouped when it is studied and when it is recalled.

Elaboration is a useful strategy for remembering pairs of unrelated words. Elaboration involves creating a visual image or a phrase or sentence which associates the words. There are detailed descriptions of normally developing children's use of these two memory strategies (Moely, 1977; Rohwer, 1973). Our investigations of category organization were based on studies conducted by Moely, Olson, Halwes & Flavell (1969) and Neimark, Slotnick and Ulrich (1971). Our investigation of elaboration was based on a study conducted by Rohwer and Ammon (1971).

In each of our studies, the performance of non-disabled children of the same chronological age as the learning disabled children set the standard for describing the performance of learning disabled children. Learning disabled children were selected by the following criteria: classification as learning disabled and current placement in a special education program; an IQ score above 90; normal hearing and vision and no history or current evidence of emotional disturbance. Non-disabled children were selected by the following criteria: chronological ages comparable to those of the learning disabled children; teacher judgment that intelligence and academic achievement were within the average range; normal hearing and vision and no history of special education or any form of supplemental or remedial instruction.

All children (learning disabled and non-disabled) were members of middle to upper-middle income families. Using U.S. Bureau of the Census descriptors (1981), 80% of the children had parents who could be described as professionals or managers. All of the children were members of families whose native language was English. The ratio of boys to girls in our samples was 4:1. Those children who participated in the category organization

studies were within the age range 9 though 15. The children who participated in the elaboration study were within the age range 11 through 17. These are the ages when the use of these strategies usually emerges.

Across all of our studies there was a significant difference in mean IQ scores between the learning disabled and non-disabled groups, favoring the non-disabled groups. Since IQ was not significantly correlated with any of our dependent measures (recall scores and scores for strategy use) we do not believe that these IQ differences compromise interpretations of our findings. Across our studies there were also significant differences in the means of scores obtained from achievment tests (reading and mathematics) favoring the non-disabled groups. This is as it should be since slow progress acquiring academic skills is the one incontrovertible fact about learning disability.

We asked the question, "Do learning disabled children use memory strategies?" In asking this question, we were seeking information about learning disabled children's spontaneous use of memory strategies; that is their propensity for using memory strategies without being told to use them. Our major findings in relation to this question may be summarized as follows:

1. Within our samples, fewer learning disabled children used category organization and elaboration as memory strategies and their recall scores, as a group, were lower than comparison groups of non-disabled children.

2. The relationship between strategy use and recall was the same for the learning disabled and non-disabled children. Those children who used efficient memory strategies earned the highest recall scores regardless of

classification (learning disabled; non-disabled).

3. The finding which we would like to emphasize, however, is the finding of extensive overlap in the performance of the learning disabled and non-disabled groups on these memory tasks. While there were consistent group differences, there were children within the learning disabled group who use efficient memory strategies and earned recall scores above the average for the non-disabled group. Conversely, there were children who were progressing normally in school who did not use efficient memory strategies and who earned recall scores below the average for the learning disabled group. Within our samples, performance on these memory tasks served as a poor predictor of who was a learning disabled child and who was a normally achieving child.

This finding of significant, but small differences in performance between learning disabled and non-disabled children and considerable overlap in the distribution of scores between the groups, is consistent with findings reported by Weener (1981) in a review of several studies which have compared the performance of learning disabled and non-disabled children on measures of cognitive processes, intelligence, achievement and personality. Weener concludes, as do we, that results which show large variability in performance on the part of learning disabled children and considerable overlap in performance between learning disabled and non-disabled children argue against making categorical statements about learning disability.

Two other findings are worthy of mention in relation to the question of learning disabled children's propensity to use memory strategies. There were age-related changes in recall and strategy use among learning disabled children which followed the pattern found among non-disabled children.

Older learning disabled children were more inclined to use memory strategies and they remembered more than younger learning disabled children. The differences between learning disabled and non-disabled children in strategy use and recall got larger, rather than smaller, at the older age levels, however. This, we believe, is a good argument for the importance of memory strategy instruction.

We asked several questions about the effects for learning disabled children of memory strategy instruction. We wanted to know if memory strategy instruction would improve learning disabled children's performance on memory tasks and particularly, if positive effects from instruction would be maintained over time and would generalize to new tasks. Major findings in response to these questions may be summarized as follows:

1. For those learning disabled children who do not use memory strategies and do not remember well, there is substantial evidence that memory strategy instruction improves performance on memory tasks. Instruction enables more children to use an efficient memory strategy and improves their recall scores.

2. Our studies are the only studies of strategy maintenance in the literature on learning disability (Worden, 1983). Findings from our studies suggest that learning disabled children will maintain the use of a memory strategy, with improvement in recall, for at least one month after instruction.

3. As far as we can tell, we have also conducted the only study of memory strategy generalization.(his statement is based on a review of the literature by Worden, 1983). Findings from this study suggest that a

significant number of learning disabled children can decide to use a memory strategy learned with one type of material with new materials. Use of the strategy with the new task results in improved recall. This finding obviously needs to be replicated.

There are two points in relation to these findings which merit discussion. The first relates to the extent of improvement made by the learning disabled children in response to memory strategy instruction. The second relates to the features of effective memory strategy instruction for learning disabled children.

There are relatively few studies of memory strategy instruction with learning disabled children(Worden, 1983). Available studies report conclusions similar to ours with respect to the immediate, task-specific effects of strategy instruction: learning disabled children's performance improves. The extent of improvement relative to the performance of non-disabled children is a rather confused issue in these studies, however. It is our opinion that none of the studies conducted to date provide unequivocal evidence that learning disabled children can be taught to perform exactly like non-disabled children on these memory tasks. We have not been able to teach learning disabled children to perform exactly like non-disabled children. In our studies instruction produced comparable strategy use between the two groups of children but it did not have a comparable effect on recall. The non-disabled children, as a group, still earned higher recall scores than the learning disabled children. Two explanations for this consistent finding may be considered. Learning disabled children may require more practice than non-disabled children to achieve optimum use from a memory strategy. Or,

there are factors in addition to strategy use contributing to differences in recall between the two groups of children.

We were very interested in identifying the features of effective memory strategy instruction. In our first instructional study, we examined different types of instruction in the use of category organization with a picture recall task. The effects of explicit or direct instruction, implicit instruction, practice alone and practice with incentives were assessed. Children who received direct instruction were told to group the pictures into categories, to study the pictures by category and to recall picture names in categories. Implicit instruction was based on assumptions about discovery learning. Pictures were placed before the children in categories on the assumption that they might "discover" how to study and recall the picture names. Practice alone simply involved repeated study/recall trials. In the practice with incentives condition, children were given repeated trials with the pictures and were paid (3 cents) for each picture name recalled correctly. Practice alone produced a decrement in the recall scores of the learning disabled children over trials. Practice with incentives produced increased recall but did not induce children to use the memory strategies. Recall scores declined when the incentives were removed. Implicit instruction did not benefit the learning disabled children. They didn't "discover" the strategy and their recall scores didn't improve. The form of instruction which provided the most stable benefits for the learning disabled children was direct instruction. Those children who were told how to study and recall used the memory strategy, their recall scores improved and both strategy use and improved recall were maintained. Evidence for the value of direct instruction was also obtained in the study of paired associate learning and elaboration.These findings are consistent with other findings

regarding the benefits of direct instruction for learning disabled children (Lloyd, Epstein, & Cullinan, 1981).

Acting on the knowledge that direct instruction in the use of a memory strategy was the best way to get learning disabled children to use it and maintain its use, we then attempted to teach a group of children to make general use of a memory strategy. That is, we wanted them to decide on their own to use the strategy with a task which wasn't included in previous instruction. Our first attempt to produce general use of a memory strategy failed. We were influenced in this study by existing psychological literature on generalization training (Borkowski & Cavanaugh, 1979). We thought that adding instruction in monitoring skills to direct strategy instruction might enable the children to use the strategy with a new task. In fact, the children who received instruction in monitoring skills didn't make general use of the strategy. However, a few children who were just taught to use the strategy did use it with the new task. We reasoned that the children who had to learn both monitoring skills and the strategy had too much to think about to pay attention to critical features of the memory task. Without attending to critical features of a task, it is very difficult to recognize tasks which are similar. Unless one knows that two tasks have similar features, it is unlikely that one would think to do the same thing with both tasks. This reasoning led us to consider the role of strategy mastery in strategy generalization.

A subsequent attempt to obtain generalization was successful. These lessons were constructed on the basis of evidence from our previous studies and the current literature on generalization training. The lessons contained several components. First children were taught to recognize the class of tasks for which the stragey was appropriate and were taught to understand the goal of the memory task. Then they were given extended, informed

practice in the use of the strategy. Extended practice was defined as several trials using varied materials. Informed practice involved keeping a continuous individual record of progress over trials so that youngsters could see that they were making progress toward the goal. The effectiveness of the strategy in attaining the goal was thus verified. Incentives were used to enhance the value of the goal. The rationale for each of these components of instruction has been described elsewhere (Gelzheiser, 1983; Gelzheiser, Solar, Shepherd and Wozniak, 1983).

In summary, the significance of our work may be summarized as follows. Several persons interested in the study of learning disability (Barclay & Hagen, 1982; Swanson, 1982; Torgesen & Licht, 1983) have suggested that failure to use task-appropriate learning strategies may be a central characteristic of learning disability. Empirical support for this hypothesis comes from two sources: memory strategy research and studies conducted in classrooms (for example McKinney & Feagans, 1983) which indicate that learning disabled children spend less time working at a task than non-disabled children. Results from our studies, conducted with a large group of children (across all studies, we have worked with approximately 300 children), argue for caution in using memory strategy research to support this hypothesis. Some learning disabled children use memory strategies spontaneously and use them as effectively as non-disabled children. More importantly, there are children who are making at least average progress in school who don't use memory strategies and don't remember picture names or word pairs very well. Obviously, failure to use memory strategies isn't a defining feature of learning disability. Results from memory

strategy research are beginning to shape theoretical and explanatory statements about learning disability. We believe that this may be a mistake.

For learning disabled children who did not use memory strategies, direct instruction and informed, extended practice resulted in strategy use and improved recall. A significant number of these children were able to maintain the use of the strategy after instruction and a significant number of the children were able to generalize the use of the strategy to a new task. Once again, though, we urge caution in interpreting results from studies of memory strategy instruction. Our studies indicate that, while the performance of learning disabled children improves with instruction, differences in recall can still be observed between learning disabled and non-disabled children.

In addition to the various studies reported in technical reports, the Task Force has produced two products. These products are lessons, or instructional units, which can be used for research on memory strategy and study skills instruction and, eventually, in classrooms. The first is the series of lessons which produced generalized use of a memory strategy by learning disabled children (Technical Report #20). The second is a series of lessons designed to teach study skills for social studies lessons (Technical Report #31). These lessons include both memory strategy instruction and more general study skills instruction.

Arithmetic

The following findings pertain to the studies of basic fact computation:

•LD children attempted only about half as many problems in the time allotted as did the non-handicapped students.

•LD students did not differ from their non-disabled peers in percent correct of problems attempted, although there was more variability in the performance scores of the LD group.

•LD students' protocols were more apt to contain evidence of counting number lines or hatch marks, for example--than the protocols of the non-handicapped students.

•LD students gave fewer automatic responses to basic facts during interviews than non-LD students. Instead, their responses reflected the use of reconstructive strategies, such as counting on.

•While both LD and non-LD students used some types of reconstructive strategies, LD children were found to rely more frequently on primitive, overt methods of counting.

•LD students differed from their non-disabled peers on the error of omission. The most frequently occurring error made by LD students on the MAT computation subtest was omission.

•When a comparison of error types was made, excluding omission, it was found that LD students did not use remarkably different, or idiosyncratic, processes in computing answers to arithmetic problems; errors made by both LD and non-LD students tended to be rule-governed.

•Computational errors made by LD subjects were similar to those made by younger non-handicapped subjects.

•LD students presented with lessons on basic facts based on the principles of direct instruction with mastery learning showed marked improvement in computational proficiency.

•No differences in gains in basic facts computation were attributable to the ways in which the presentation of facts was sequenced.

These findings pertain to studies of solving story problems:

•LD students given precise and carefully sequenced instruction including procedural and task specific knowledge improve in story problem performance.

•2nd Grade LD children were as accurate in their conservation judgments as their non-disabled peers.

•Subjects for the studies of the Arithmetic Task Force were drawn from public and private day school classes for children certified as learning disabled. No other selection criterion was applied except age. It is, therefore, encouraging to be able to report that mean and standard devications for each sample and for the sample as a whole is extremely close to the population parameters of 100 and 15. This finding is contrary to those presently reported by Shepard, Smith and Vojir (1983).

•Some studies used a comparison group of students who were eligible for and receiving compensatory arithmetic education services, either under federal or state mandates. Results in these studies demonstrate a clear rank order effect in which performance levels of non-disabled students were higher than those of compensatory education students, which in turn were higher than scores of learning disabled students. These findings support the assumption that students with the widest discrepancy between aptitude and achievement are in fact being classified as learning disabled.

Basic Reading and Spelling

.Control of information load, intensity of skill training, distribution of practice, and similar instructional principles were identified as critical to "LD-efficient" teaching, and enabled LD children to circumvent certain disabilities in spelling, word recognition, and phonic decoding.

.Limiting the number of new sight words taught at one time decreased significantly the mean number of trials to mastery and the mean number of errors made by LD youngsters learning sight words.

.In a set of sights word lessons, the mastery and retention of LD youngsters increased from 501 to 751 of the words when a high review procedure was incorporated into the lessons.

.Use of reduced response competition as an instructional modification eliminated differences between LD and non-LD youngsters on a paired associate learning task. Instructional time was reduced by 43.1 for the LD group and 33.1 for the non-LD group.

.Teaching new items to mastery improved the performance of LD youngsters when learning both sight words and phonic elements.

.Providing focus on a spelling pattern to be learned, significantly improved LD youngsters' transfer of the pattern to novel words.

.When children were taught spelling words following LD-efficient teaching procedures, retroactive inhibition was not evident. That is, the learning of subsequent lists of words did not interfere significantly with the retention of previously mastered words.

.Below average spellers in 6th and 8th grades appear to be less adept at using part of speech information to spell suffix endings correctly than above average spellers at the same grade level.

.For a group of LD high school students, incorrect spelling did not interfere with subsequent learning or retention of the same words, provided that carefully selected teaching procedures are followed.

.LD children retained common vowel digraphs (ex: ou) equally as well when taught sounds in isolation and when sounds were introduced through sight words.

Reading Comprehension

I. Integration of Characteristics of the Text and of the Reader

Learning disabled children's sensitivity to text structure and how that affects their understanding of the main idea in simple expository paragraphs has been of interest to this task force. Learning disabled and nondisabled readers' performance was assessed in tasks similar to classroom comprehension assignments as well as on very sensitive experimental measures. Results of these studies indicate an increase in sensitivity to text structure with age. Additionally, LD readers were found to be as competent as nondisabled readers in their ability to comprehend and use the main idea, and in using elements of text macrostructure to detect a deviant sentence. These results suggest that it will be possible to improve disabled readers' performance by the judicious use of a variety of techniques that appear to be effective with nondisabled readers. An instructional program focused on teaching LD children to find the main idea in simple expository paragraphs has been developed on the basis of these findings. The program was evaluated and found effective for a sample of 4th to 6th grade LD children.

The Specific findings are as follows:

.Given comparable verbal ability and comparable achievement in basic

reading skills, LD children are not handicapped, relative to non-disabled children, in terms of sensitivity to text structure. (This is indicated in terms of their ability to utilize information in topic sentences, to detect anomalous information inserted into texts, etc.). This instruction in reading for these children should allow them to focus on their higher-level skills and thus to allow them to develop more fully.

.The identification of main ideas in expository text can be understood in terms of a model that is based on general cognitive processes of categorization and classification. This model was of value in the design and development of an instructional program aimed at teaching main-idea identification to LD readers in the middle grades.

.LD children are aided in the development of their ability to recognize and formulate main idea statements by the administration of the instructional program we developed.

.Variations in strategies used by LD children, nondisabled children, and adults in the comprehension of cohesive ties have been studied. Moderately learning disabled children tend to persist in text strategies in the face of interpretations that violate prior knowledge and experience; children with severe learning disabilities who are not sensitive to text structure interpret text primarily in terms of prior knowledge, using minimal textual information. Remedial strategies have been developed.

II. Semantic Recoding and Schema Applications

.Text characteristics and short-term memory were investigated in relation to semantic encoding of elaborate sentence subjects. Preliminary data showed that such constructions were extremely difficult for some reading comprehension disabled children to interpret and that children's semantic

recodings of sentences with complex subjects were systematically faulty. It is suggested that inappropriate processing strategies were being applied. Some children showed a consistent tendency to take the nearest noun phrase as the subject of the verb, regardless of its syntactic function.

•Some reading comprehension disabled children fail to establish brdiging assumptions that relate to a unified schema. These youngsters seem to have a consistent tendency to treat each sentence independently.

•Some reading comprehension disabled children were found who consistently used a fixed hypothesis text processing strategy. Children who used this strategy tended to form an interpretation of the early portion of a text and tried to interpret all the subsequent text in conformity with the initial interpretation.

•A screening instrument (INPUT) was developed that will identify children with this type of deficient text processing strategy: This instrument has been shortened and revised and is now ready for use by other researchers and classroom teachers.

Because of their use of a fixed-hypothesis strategy, the text processing identified children tended to have particular difficulty with expository texts that used an inductive text structure. The inductive texts studied were all texts in which the main idea was either stated late in the text or had to be inferred from the total text.

Children who used a fixed hypothesis text processing strategy tended to omit key words that signalled the structure of the inductive texts. Thus lessons were developed that helped these reading comprehension disabled children to recognize and interpret these key words in different types of inductive texts. The lessons also introduced the children to practical

specific strategies which encouraged them to withhold their judgment of paragraph content until they had read the whole passage. These lessons are also available for use by other researchers and classroom teachers.

Other reading comprehension disabled children tended to use a strategy in which they used topics and relations in the text to call up related background knowledge, but were not much constrained by the specific information in the text. They read as if the text was simply saying whatever they already knew. These children have difficulty with texts that present information that requires them to correct a misconception about a topic, i.e., refutation structure texts.

The nature of the question, the structure of the text and the reader's prior knowledge interacted to affect comprehension of these refutation structure texts.

Recalls of these children indicated that they tended to omit words that signalled the contrast structure in these texts (misconception signal words and adversatives).

Thus, lessons and materials were developed that focused on the function of adversatives at the sentence and paragraph levels.

A study has been completed to determine whether pre-questions related to the misconception will assist comprehension of these refutation structure texts.

A group of children was located that exhibit large discrepancies between their vocabulary and comprehension scores as measured by a standardized test. Individual sessions with these children indicated that they were hampered by various unproductive reading strategies. This type of discrepancy was shown to be a useful means of locating children with specific comprehension problems.

Major Activities

During the first year of funding, progress was made in establishing the administrative organization of the Institute, conceptualizing the work of each task force, and reviewing literature relevant to the planned research. Efforts focused on specific activities during this planning year: the identification of the component disabilities to be studied (sight words, letter-sound associations, spelling, and automatic recall of number facts); the analysis of traditional and remedial instructional approaches; the development of experimental lessons (called "LD efficient") and their use in pilot studies; the construction and piloting of several measurement instruments; the selection of client sources; and the establishment of training opportunities within the Institute.

In all task force efforts, it became clear that the child with learning disabilities was being looked at from the perspective of his/her functioning as a human information processor. Themes centering on how information is perceived, encoded, organized, integrated, and stored surfaced in all the work. Thus, in the middle of the second year, the theoretical approach of information processing became more clearly articulated. It was hoped that this approach would provide a means of creating a definition of LD with greater specificity than previously possible.

Weekly meetings of the Principal Investigators proved an effective communication vehicle in which to formulate research plans, discuss problems, and further elaborate on the Institute's theoretical structure. A site visit by the then BEH staff provided much feedback, assisted in the clarification of important issues, and generated subsequent Institute discussion.

As the research proceeded, increasing overlap was evident in the directions taken by various task forces (particularly GLD and Arithmetic). It was also clear

that reading and spelling shared many common features and that investigations of disorders in these areas would be enhanced by closer collaboration in the formulation of studies and interpretation of results. These task forces also used common study populations.

Pursuing the nature of information-processing difficulties, the Institute continued to generate interesting findings as questions were raised about information processing differences in LD and nondisabled children. Discrete findings of various task forces complemented those of other Institute investigators, and real progress was made in conceptualizing a model of LD. It was identified that the task force investigations shared the methodological orientation designed by Belmont and Butterfield (1977) as "the instructional approach" in developmental cognitive research.

During the third year data collection continued and several studies were completed. Screening procedures for arithmetic learning disabilities were examined; LD and nondisabled children were video-taped in order to observe problem solving strategies as well as study/recall behaviors. Expository passages to discriminate between LD and non-LD children's recall were developed. The Reading Comprehension Task Force divided into two clearly identifiable subsections: Section I: to study semantic recoding and schema applications under the direction of Dr. MacGinitie; Section II: to study integration of characteristics of texts and readers under the direction of Dr. Williams.

At the end of Year 3, Task Force research reflected the growing awareness of the need for systematic study of problem solving strategies employed by normally-achieving children and learning disabled youngsters. What studies revealed was that the LD children have greater difficulties in organizing information for retrieval, and take a longer time to achieve an expected level of proficiency, but they are indeed capable of such achievement.

Further systematic inquiry was planned to describe information between LD and nondisabled learners.

The last three years of the Institute were spend pursuing three major activities: 1) data collection and analysis for the proposed studies; 2) development of teaching materials and techniques and 3) dissemination. Using the first three years as a research base, inquiries were planned to investigate the problem solving strategies, study skills, and text interpretation abilities of learning disabled and nondisabled children. While most studies used groups of children, in some studies, interviews of individual subjects were conducted in an attempt to determine the differences in information processing abilities between these two groups.

Based on the findings of the research conducted at the Institute, curricular materials were developed by each task force. These materials appeared as sample lesson plans, diagnostic tests, and manuals to be used with existing curricula. The instructional strategies described in these educational tools incorporated relevant principles of direct instruction and elements of cognitive behavior modification.

While dissemination occurred throughout the entire six years of the Institute's existence, it became the primary focus of the final eighteen months. Six newsletters describing current investigations and findings have been printed and distributed; a seventh one is being produced and will be mailed to over 9,000 parents, teachers, and members of professional organizations. Presentations of Institute findings have been made at numerous conferences and workshops. The research efforts have been formally summarized into over 30 monographs and technical reports which are mailed out on request. The work of the Institute has also been disseminated through related courses at Teachers College, and journal articles and book chapters and ongoing research activities with graduate students.

Problems

The problems in the first three years of the Institute mainly involved organizational considerations and experimental designs. Later, as the number of ongoing studies rapidly increased, difficulties arose concerning subject selection, the scheduling of data collection, and data analysis.Below are listed the major problems encountered over the Institute's six year history.

1. Early in the Institute's work, as reported in 1980, the decision was made to use group lessons rather than individual teaching lessons. The rationale for this design change included the following:

   a. group lessons were more closely related to the Institute's goal of providing effective procedures for teaching LD children in regular and special education classrooms.
   b. group procedures and interactions were believed to be intricately interwoven with the child's dysfunction.
   c. the tendency for a child to experience confusion is greater in a group than in individual lessons.

2. Subsequent to an acute and prolonged illness, Dr. N. Dale Bryant was replaced as Director by Dr. Frances P. Connor, Chairman of the Department of Special Education.

3. A prolonged bus strike (February-May, 1979), cutbacks in the funding of summer programs, administrative and organizational changes in the LD Resource Room Program in the New York City Board of Education, all contributed to unanticipated delays in data collection.

4. Working on a definition of LD continued to be problemmatic. It was agreed to accept as "LD," all children who, according to state regulation,

met the criteria for such a classification in the local communities. One exception to this subject selection process was MacGinitie's effort to isolate children with specific comprehension problems. These children exhibited large discrepancies between their vocabulary and comprehension scores as measured by a standardized test.

5. Problems faced the Institute in terms of client sources. Due to changes in school policies regarding new privacy and due process regulations, it was sometimes difficult to obtain parental consent; in other cases, the specific criteria for subject selection for Institute experiments made locating an adequate sample time consuming.

6. Differing school vacation patterns and winter absenteeism delayed data collection, especially for the more lengthy studies involving repeated measures.

7. Early responses from volunteers doing field testing were slow and limited in number, therby delaying data analysis.

8. The complexity of the statistical analysis used in developing a screening instrument for reading comprehension led to revision and modification (in the focus of future studies).

9. As in the development of all curricular materials, a great number of revisions of the LD-Efficient Manual were required to insure that the coverage of instructional strategies was clear and comprehensive for use by teachers of LD children.

DISSEMINATION

The work of the Institute has been disseminated through its newsletters, technical reports, other published articles and book chapters, direct relationships in the field (research planning, data collection, field testing), communications with parents and professional (conferences, workshops), and research/teaching activities with graduate students.

Regularly scheduled doctoral seminars, directed research, and research practice in the Department of Psychology and Special Education at Teachers College, Columbia University have proven to be a major vehicle for training, interaction, and dissemination. Students' dissertations are among the important research products associated with the Institute's ongoing activities.

This section of the final report includes partial listings of dissemination activities.

Institute Publications

Monographs:

The Research Review Series, 1979-1983, is ready with the following titles:

Volume 1: Preventing and Remediating the Effects of LD: Remedial Principles vs. Folklore, Fads and Failure. N.D. Bryant

Volume 2: A Review of Research on the Relationship of LD and Reading Methods. N.D. Bryant, P. Peister, S. Bryant, H. Fayne, K. Pierce

Volume 3: Spelling Instruction: A Literature Review. M. Stanback

Volume 4: Arithmetic Learning Disabilities: A Literature Review. J. Fleischner and K. Garnett

Volume 5: The Relation of Decoding and Fluency Skills to Skilled Reading. M.B. Taylor

Volume 6: Bibliographies and Summaries of Selected Articles in Reading Comprehension. S. Ganger, W. MacGinitie, J.P. Williams

Manuals:

#1 - Manual for LD-Efficient Reading Instruction.
N.D. Bryant and M. Kelly

#2 - Efficient Spelling Program for Primary Grades and All Learning Disabled.
N.D. Bryant and M. Kelly

#3 - A Strategies Generalization Approach to Basic Fact Learning (Addition and Subtraction Lessons).
K. Garnett, B. Frank, and J. Fleischner

#4 - A Mastery/Motivation Approach to Basic Fact Learning (Addition and Subtraction Lessons).
K. Garnett, B. Frank, and J. Fleischner

#5 - A Strategies Generalization Approach to Basic Fact Learning (Multiplication Lessons).
K. Garnett, B. Frank, and J. Fleischner

#6 - A Mastery/Motivation Approach to Basic Fact Learning (Multiplication Lessons).
K. Garnett, B. Frank, and J. Fleischner

#7 - Arithmetic Story Problem Solving: Instructional Plan.
B. Nuzum and J. Fleischner

Technical Reports:

#1 - "LD Efficient" Instruction in Phonics: Applying Sound Learning Principles to Remedial Teaching.
N.D. Bryant, H. Fayne, and M. Gettinger

#2 - Applying the Mastery Model to Sight Word Instruction for Disabled Readers.
N.D. Bryant, H. Fayne, and M. Gettinger

#3 - Designing Spelling Instruction for Learning Disabled Youngsters: An Emphasis on Unit Size, Distributed Practice, and Training for Transfer.
N.D. Bryant, H. Fayne, and M. Gettinger

#4 - Narrowing the Gap Between Research and Practice.
N.D. Bryant, H. Fayne, B. Gavish, and M. Gettinger

#5 - The Relative Effect of Various Word Synthesis Strategies on the Phonics Achievement of Learning Disabled Youngsters.
H. Fayne and N.D. Bryant

#6 - Eliminating Differences Between Learning Disabled and Non-disabled Children on a Paired-Associate Learning Task.
N.D. Bryant and M. Gettinger

#7 - Phonics Instruction for Disabled Learners: Applying Theory to Method.
H. Fayne

#8 - The Effect of Practice vs. Practice with Informative Feedback on Sight Word Vocalization Time for Normal and Disabled Readers.
I. Gille and H. Fayne

#9 - Proficiency in Arithmetic Basic Fact Computation of Learning Disabled and Nondisabled Children.
J. Fleischner, K. Garnett, and M.J. Shepherd

#10 - Automatization and Basic Fact Performance of Normal and Learning Disabled Children.
K. Garnett and J. Fleischner

#11 - Prior Knowledge as a Handicapping Condition.
K. Maria and W. MacGinitie

#12 - Story Problem Solving: Implications of Research for Teaching Children With Learning Disabilities.
M. O'Loughlin and J. Fleischner

#13 - Children with a Perseverative Text Interpretation Strategy: The Effect of Text Organization.
S. Kimmel and W. MacGinitie

#14 - Hypothesis Testing in Reading Comprehension.
S. Kimmel and W. MacGinitie

#15 - Identifying Children Who Use A Preseverative Text Processing Strategy.
S. Kimmel and W. MacGinitie

#16 - Congruence of Prior Knowledge and Text Information as a Factor in the Reading Comprehension of Middle-Grade Children.
K Maria and W. MacGinitie

#17 - Mastery of Basic Number Facts By Learning Disabled Students: An Intervention Study.
J. Fleischner, K. Garnett, and D. Preddy

#18 - Factors in the Comprehension of Expository Text in Normally-Achieving and Learning-Disabled Children.
J.P. Williams and M.B. Taylor

#19 - Helping Children Develop Flexible Text Interpretation Strategies.
W.H. MacGinitie, J.S. Rogers, and C. McArthur

#20 - Protocols and Materials for Generalization Training.
L.M. Gelzheiser

#21 - Instructing Learning Disabled Children to Make Continued and General Use of A Strategy For Memorizing Information.
M.J. Shepherd and L.M. Gelzheiser

#22 - How Learning Disabled and Nondisabled Readers Construct Macrostructure (Find the Main Idea) For Expository Text.
J.P. Williams, M.B. Taylor, and J.S. deCani

#23 - Variations in the Structure and Content of Text and the Comprehension of Learning-Disabled and Non-Disabled Readers.
J.P. Williams and M.B. Taylor

#24 - The Effects of Instruction and Incentives on Learning Disabled and Non-Disabled Children's Use of an Organization Strategy to Aid Recall.
R. Cort, M.J. Shepherd, and B. Frank

#25 - Determining the Main Idea of Expository Paragraphs: An Instructional Program for the Learning-Disabled and Its Evaluation.
J.P. Williams, M.B. Taylor, D.C. Jarin, and E.S. Milligan

#26 - The Effect of Minimal Instruction on the Paired Associate Task Performance of Learning Disabled and Non-Disabled Adolescents.
R.A. Solar

#27 - Improving the Performance of Children with Learning Disabilities: Instruction Matters.
J. Fleischner and M.J. Shepherd

#28 - Teaching Learning Disabled Children to Memorize: A Rationale for Plans and Practice.
L.M. Gelzheiser, R.A. Solar, M.J. Shepherd, and R.H. Wozniak

#29 - Generalization of Four Study Rules for Categorical Memory Tasks By Learning Disabled Adolescents.
L.M. Gelzheiser

#30 - The Effect of Refutation Structure Texts on the Reading Comprehension of Middle Grade Poor Comprehenders.
K. Maria and W.H. MacGinitie

#31 - Teaching General and Specific Study Skills to Learning Disabled Adolescents: Lessons Ready for Validation. (in preparation)
M. O'Loughlin, K. Reitzes, and M.J. Shepherd

#32 - Cross-age Investigations of Learning Disabled and Non-Disabled Children's Spontaneous Use of Mnemonic Strategies.
M.J. Shepherd, L.M. Gelzheiser, and R.A. Solar

#33 - Memory-Metamemory Relationships Among Learning Disabled and Non-Disabled Children. (in preparation)
J. Shapiro

#34 - The Use of Advance Organizers to Aid Learning and Recall. (in preparation)
S.E. Edgar and M.J. Shepherd

#35 - An Attempt to Induce Generalization by Teaching Monitoring Skills. (in preparation)
M.J. Shepherd, L.M. Gelzheiser, and R.A. Solar

Publications

Contributions to journals and books include the following:

Bryant, N. Dale. Modifying Instruction to Minimize the Effects of Learning Disabilities. The Forum, Fall 1980, Vol. 6, No. 4, 19-21.

Bryant, N.D., Drabin, I. & Gettinger, M. Effects of varying unit size on spelling achievement in learning disabled children. Journal of Learning Disabilities, April, 1981, vol. 14, No. 4.

Bryant, N.D. & Gettinger, M. Eliminating differences between learning disabled and non-disabled children on a paired-associative learning task. Journal of Educational Research, May/June, 1981, vol., 74, No. 5.

Bryant, N.D. Teachers urged to simplify classes for learning disabled, Teachers College Today, Fall 1982, 11 (1), 2-3.

Bryant, N.D., and Fadiman, M. Why Kids can't learn. Sesame Street Parents Newsletter, January 1983, 1 (11), 4-5.

Bryant, N.D. Dyslexia. In T. Husén and T. N. Postlethwaite (Eds.) International Encyclopedia of Education. Oxford: Pergamon Press, 1983.

Fayne, H.R. A comparison of learning disabled adolescents with normal learners on an anaphoric pronomial reference task. Journal of Learning Disabilities, 1981, 14 (10), 597-599.

Fayne, H.R. & Bryant, N.D. Relative effects of various word synthesis strategies on the phonics achievement of LD youngsters. Journal of Educational Psychology, 73 (5), 1981, 616-623.

Fayne, H.R. & Gettinger, M. Narrowing the gap between research and practice in sight word reading instruction. Psychology in the Schools, 17, 1980, 240-245.

Fleischner, J.E. Viewpoint Guest Editor. Focus on Research in Learning Disabilities: Reports from the Research Institutes. The Forum, Fall 1980, Vol. 6, No. 4, 3, 23.

Fleischner, J.E. and Frank, B. Visual-Spatial Ability and Mathematics Achievement in Disabled and Normal Boys. Focus on Learning Problems in Mathematics, 1978, Vol. 1, No. 3, 7-22.

Fleischner, J. & Garnett, K. Arithmetic difficulties among learning disabled children: Background and current directions. Learning Disabilities: An Interdisciplinary Journal, September, 1983.

Fleischner, J.E. & Shepherd, M.J. Improving the performance of Children with learning disabilities: Instruction matters. In K.A. Kramer and N.J. Latini (Eds.), Translating Research into Practice: Increasing the Effectiveness of Learning Disabilities Programs. Leadership Series in Special Education (Vol. 10) Minneapolis Public Schools, 1981.

Fleischner, J., Shepherd, M. & Garnett, K. Proficiency in arithmetic basic facts computation of learning disabled and nondisabled children. Focus on Learning Problems in Mathematics, 1983, vol. 4, No. 2.

Garnett, K. & Fleischner, J. Automatization and basic fact recall in LD and non-disabled children. Learning Disabilities Quarterly, Summer, 1983.

Gelzheiser, L.M. Generalization of four study rules for categorical memory tasks by learning disabled adolescents. (submitted to Journal of Educational Psychology)

Gelzheiser, L.M., Solar, R.A., Shepherd, M.J., & Wozniak, R.H. Teaching learning disabled children to memorize: A rationale for plans and practice. Topical Review Series, Journal of Learning Disabilities, 1983, 16 (7), 421-425.

Gettinger, M., Bryant, N.D., and Fayne, H.R. Designing spelling instruction for learning-disabled children: an emphasis on unit size, distributed practice, and training for transfer. The Journal of Special Education, 1982, 16(4), 439-448.

Gettinger, M. & Fayne, H. Classroom behaviors during small group instruction and learning performance in learning disabled and nondisabled children. Journal of Educational Research, January/February, 1982, vol. 75, No. 3.

Kimmel, S., & MacGinitie, W.H. Identifying children who use a perseverative text processing strategy, Reading Research Quarterly, 1984.

MacGinitie, W., Maria, K. & Kimmel, S. El papel de las estrategies cognitival no-acomodativas en ciertas dificultades de comprension de la lectural. In E. Ferreiro and M. Gomez Palacio (Eds.), Nuevas Perspecivas Sobre los Oricesis de Lectura y Escrittra. Mexico, D.F.: Siglo Veintiuno, 1982.

Maria, K. & MacGinitie, W. Reading Comprehension disabilities: Knowledge structures and non-accomodating text processing strategies. Annals of Dyslexia, 1982, 32, 33-59.

Shepherd, M.J. Special Education for Children Described as Learning Disabled. In H. Solan (Ed.) The Treatment and Management of Children with Learning Disorders. Springfield, IL: Charles C. Thomas, 1982.

Shepherd, M.J. Specific learning disability. International Encyclopedia of Education: Research and Studies. Pergamon Press (in press).

Shepherd, M.J. & Gelzheiser, L.M. Instructing learning disabled children to make general and continued use of a strategy for memorizing information. In R.N. Malatesha & H.A. Whitaker (Eds.) Dyslexia: A Global Issue. Proceedings of the NATO Advanced Study Institute. Plenum (in press).

Shepherd, M.J., Gelzheiser, L.M., & Solar, R.A. Cross-age investigations of learning disabled and nondisabled children's spontaneous use of memory strategies. (submitted to Learning Disabilities Quarterly)

Shepherd, M.J., Gelzheiser, L.M., Griswold, P.C., Solar, R.A., & Cort, R.H. Differential effects of strategy training with learning disabled and nondisabled children. (in preparation)

Taylor, M.B. & Williams, J.P. Comprehension of learning disabled readers: task and text variations. Journal of Educational Psychology, October, 1983 (in press).

Williams, J.P. Psychology and education. In M.H. Bornstein (Ed.) Psychology and its related disciplines. Hillside, N.J.: Lawrence Erlbaum Associates, 1983.

Williams, J.P., Taylor, M.B. How learning disabled readers find the main idea in expository text. (in preparation).

Williams, J.P., Taylor, M.B., & deCani, J.S. The development of the ability to construct macrostructure for expository text. (in preparation)

Williams, J., Taylor, M., & Ganger, S. Text variations at the level of the individual sentence on the comprehension of simple expository paragraphs. Journal of Educational Psychology, December, 1981.

Williams, J.P., Taylor, M.B., Jarin, D.C., & Milligan, E.S. Determining the main idea of expository texts: an instructional program for the L.D. reader and its evaluation. (in preparation)

Doctoral Dissertations

A major aspect of the Institute's design called for the training of competent researchers to continue the study of children with learning disabilities. The formal products of this effort are reflected in the numbers of doctoral dissertations completed during the six years of the Institute's operation. As can be seen in the list of doctoral dissertations completed which follows, close to 60 Institute related student studies contributed to our general productivity and long term impact.

1977 - 1978

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Bloomer, Corinne H.	A Six Year Follow-up Study on Learning Disabled Children in a Resource Room Program	Shepherd & Fleischner
Gettinger, Maribeth	Is Time-to-Learn or Measured Intelligence a Stronger Correlate of School Learning?	White, Boehm & Bryant
Horowitz, Elizabeth Van V.	Popularity, Decentering Ability, and Role Taking Ability in Learning Disabled and Normal Children	Shepherd & Fleischner
Kattke, Meredith L.	The Ability of Kindergarten Children to Analyze 2-Phoneme Words	Williams & McKillop
Kirk, Ursula	Rule-based Instruction: A Cognitive Approach to Beginning Handwriting Instruction	Fleischner & Gentile
Luchow, Jed P.	The Effect of Adding Sensory Inputs on a Visual Matching Task With Learning Disabled Boys	Shepherd & Sontag
Maltin, Marjorie S.	Phonemic Segmentation and Reading Acquisition Skills in First Grade Children	Williams & McKillop

1978 - 1979

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Mattingly, Jane	Semantic Relations and Grammatical Morphemes used by Language Delayed Preschoolers	Shepherd & Fleischner
Nix, Donald H.	Toward a Systematic Description of Some Experimental Aspects of Children's Reading Comprehension	MacGinitie & Bryant
Sonnenborn, Vivian S.	A comparison of Recall Performance in Learning Disabled and Non-Disabled Youngsters	Fleischner & Bilsky
Bryant, Susan T.	Relative Effectiveness of Visual-Auditory Versus Visual-Auditory-Kinesthetic-Tactile Procedures for Teaching Sight Words and Letter Sounds to Young Disabled Readers	Shepherd & McKillop
Danzig, Marilyn	Concept Development of Neurologically Impaired Children	Fleischner, Bilsky & Shepherd
Frank, Barbara	An Investigation of the Relationship Between Visual-Spatial Ability and Achievement in Mathematics in Normal and Learning Disabled Children	Fleischner & Shepherd
Kaufman, Nadeen L.	Reversals and Reading: Standardization and Validation of the Horst Reversals Test for Black and White First Grade Children	Shepherd & Fleischner
Liss, Phoebe	Characteristics of Children Designated as Learning Disabled Referred to a Clinic for Children with Learning and Behavioral Problems	Shepherd & Fleischner
Rubin, Evelyn C.	Teaching Sight Words to Beginning Readers: The Effect of Emphasizing Spelling Patterns	Bryant, McKillop & MacGinitie

1979 - 1980

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Bennett, Randy E.	Basic Measurement Skills of Special Education Teacher Diagnosticians	Shepherd & Wolf
Drabin-Partenio, Ingrid R.	The Relative Effect on Initial Learning, Retention and Transfer, of Pattern, Focus and Review/Transfer Training For Poor Spellers	Bryant, Tannenbaum & Blackman
Fayne, Harriet R.	The Effect of Various Methods of Word Synthesis on the Phonics Achievement of Learning Disabled Youngsters	Bryant, McKillop & Sontag
Garnett, Katherine	A Study of Basic Arithmetic Fact Performance and Automation Ability in Learning Disabled and Normal Children	Fleischner & Mar
Oestereicher, Mary H.	On the Contribution of Category Context to Visual Word Recognition of Category Exemplars: A Developmental Study	MacGinitie, Parker & Braine
Wellington, Frederick W.	A comparison of Refocusing Abilities of Normal and Learning Disabled Children Following Various Forms of Distraction	Fleischner & Connor

1980 - 1981

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Cort, Rebecca	Effects of Training on Recall and Use of Organizational Strategies by Learning Disabled and Non-Disabled Youngsters	Shepherd, Bilsky & Mar
Edgar, Susan	The Effect of Advance Organizers on Expository Passage Recall by Learning Disabled and Non-Disabled Youngsters	Shepherd & Fleischner
Fine, Elaine	Performance of College Students Classified as Learning Disabled and Emotionally Disturbed on the Woodcock-Johnson Psycho-Educational Battery	Shepherd & Dragoon
Kligerman, Jacqueline	The Effects of Color Reversal of Stimulus and Response Materials on the Performance of Learning Disabled and Normal Learning Children on the Bender-Gestalt Test	Fleischner & Bilsky
Oppenheim, Virginia	The Importance of Phrasing to Reading Comprehension	McKillop & Bryant
Schneider, Estelle Cooper	An Investigation of Community Colleges Students' Abilities to State the Main Idea of Expository Passages	Shepherd & Bilsky

1981 - 1982

Clark III Henry T.	The Effects of Practice on the Functional Unit in Single Word Perception	Davitz & Wiiliams
Hyman, Irene Bachman	The Effect of Junior College Students' Self-Generated Questions on Reading Comprehension	Shepherd & Bryant
Kimmel, Susan	Children with a Perseverative Text Interpretation Strategy: the Effect of Text Organization	MacGinitie, Bryant & Strickland

1981 - 1982

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Lieby, Joseph	Automatization Cognitive Style and the Selection of an Instructional Method for Teaching Basic Math Facts to Learning Disable and Compensatory Education Students	Fleischner & Shepherd
Maria, Katherine	The Effect of Refutation Structure Texts on the Reading Comprehension of Middle Grade Poor Comprehenders	MacGinitie, Bryant,
Osborn, Julia Bye	The Relationship of Auditory Phoneme Blending and Auditory Phoneme Segmenting to Each Other and to Reading Achievement	Bryant, McKillop & Sontag
Sadoff, Arthur C.	Relationships Between the Horst Reversals Test, the Liberman Word Segmentation Task and End of First Grade Reading	Shepherd & Fleischner

1982 - 1983

Garofano, Neil	An Investigation into the Computational and Conservation Performance of Second Grade Learning Disabled Students	Shepherd
Gelzheiser, Lynn	The Effects of Direct Instruction on Learning Disabled Children's Ability to Generalize Study Behaviors for Deliberate Memory Tasks	Shepherd
Nuzum, Margaret	The Effect of a Comprehensive Curriculum Based on the Information Processing Paradigm on the Arithmetic Story Problem Solving Performance of Learning Disabled Students	Fleischner
Shapiro, Joan	An Investigation of Metamemory Relationship in Learning Disabled and Non-Learning Disabled Children	Fleischner
Solar, Roberta	The Performance of Learning Disabled and Non-Disabled Adolescents on a Paired Associate Task	Shepherd

1982 - 1983

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Walker, Pat Neff	Cognitive Processes in Reading Comprehension	Bever & Williams

1983 - 1984

Bishop, F. Michler Jr.	Discourse Integration By Good and Poor Readers	Williams, Monroe, & Boehm
Canale, Salvatore	Memory for LD and Normal Learners: Initial Learning Inadequacy vs. More Rapid Forgetting	Bryant
Cayne, Patricia	Dichotic Listening in Poor and Good Readers: Implications For Process	Bryant
Clark, Diana	An Investigation of the Effects of Two Methods of Vocabulary Instruction--A Story Schema Approach and A Traditional Synonym Approach--On the Acquisition of Word Meanings and Reading Comprehension	Shepherd & Fleischner
Feldman, Richard	Does Context Affect Word Recognition Differently in Good and Poor Readers	Bryant
Fischer, Joanne	Temporary and Continuing Reading Difficulties in First Grade Underachievers: Analysis of WISC Patterns and Other Measures	Bryant
Glucksman, Janet	Effects of Closed Head Injury on Reading and Cognitive Abilities	Bryant
Griswold, Peter	Teaching Learning Disabled and Non-Disabled Children Strategies for Memorizing Word Meanings	Shepherd & Bilsky
Hansen, Randy	Rate of Reading for Understanding: Effects of Speed Training vs. Requirement to Understand	Bryant
Hathaway, Katheryn	Performance of Learning Disabled and Nondisabled Children on One-Step Arithmetic Story Problems	Fleischner

1983 - 1984

STUDENT	DISSERTATION TITLE	FACULTY COMMITTEE
Jacobs, Marc	Composition Quality in Learning Disabled Children	Shepherd & Fleischner
Katz, Janet	Informal Number Concepts in Kindergarten Children At Risk for Learning Disabilities	Fleischner & Shepherd
Katz, Norma	An Instructional Module Based on a Comparison of Children's Learning of Addition Algorithms with Regrouping	Fleischner & Shepherd
Ravinsky, Nancy	Acoustic vs. Visual Similarities in Word Recognition: Influence in LD and Normal Learners	Bryant
Raymond, Valerie	LD and Normal Spellers' Strength of Learning Acquisition and Rate of Decay	Bryant
Quandt, Diane	Arithmetic Story Problem Solving Performance of Learning Disabled and Nondisabled Children	Fleischner
Taylor, Maravene Beth	The Effects of Text Recall of Local and Global Organization Variables	Williams, Sontag & Davitz

Presentations at Professional Meetings

The Principal Investigators have made presentations at meetings of national, state, and local associations and organizations concerned with the education of children with learning disabilities. The following listings reflect the extent of dissemination and some sources of the feedback our researchers received from the field.

N. Dale Bryant (Basic Reading and Spelling)

Improving instructional procedures for working with mainstreamed children. New York Association for the Learning Disabled, New York, N. Y. (with H.R. Fayne, M. Gettinger), December 1978.

Research update: Basic reading and spelling. Association for Children with Learning Disabilities, San Francisco, Calif., March 1979.

Council for Exceptional Children, Dallas, Texas, April 1979.

American Psychological Association, New York, N. Y., September 1979.

Division on Children with Learning Disabilities, Louisville, Kentucky, October 1979.

Association for Children with Learning Disabilities, Milwaukee, Wisconsin (with M. Gettinger, H.R. Fayne, S. Bryant, I. Drabin, J. Glucksman), March 1980.

The Neuropsychology of language and reading. Teachers College, New York, N. Y., March 1980.

Churchill School Conference for Teachers, Teachers College, New York, N. Y., March 1980.

Mainstreaming instructional procedures to minimize the effects of learning disabilities in basic reading and spelling. The Council for Exceptional Children, Philadelphia, PA (with H.R. Fayne, M. Gettinger), April 1980.

Neuroeducational Center Conference at The William Beaumont Hospital, Detroit, Michigan, in honor of Dr. Ralph Rabinowitch, April 1980.

International Reading Association, St. Louis, MO, May 1980.

Orton Society, New York, N. Y., dedication of the Orton library at Columbia Medical School, May 1980.

International Conference on School Psychology, Jerusalem, Israel, June-July 1980.

New York City Association for Children with Learning Disabilities, N.Y., N.Y. 1981.

Association for Children with Learning Disabilities, Atlanta, Georgia, February, 1981.

New York Branch of the Orton Society, Manhattanville College, N.Y., 1981

Current Research. New York Association for the Learning Disabled, NY, N.Y. December, 1980.

Presentation of the Task Force Products. University of Utah, Salt Lake City, Utah, April 1981.

Presentation of the Task Force Products. Kennedy Center of the Albert Einstein College of Medicine, Bronx, N.Y. May 1981.

New York Association for Learning Disabilities, Syracuse, N.Y. November, 1981.

Presentation of the Task Force Products. American Reading Forum, Sarasota, Fla., Dec. 1981.

Teachers Consulation: Effective Instruction of Learning Disabled Children in the Class or Resource Room. Eighteenth Annual School Psychology Conference "Intervention Strategies in Schools," sponsored by Queens College and the City University of New York, Flushing, N.Y. Jan. 1982.

Presentation of Task Force Materials. Association for Children with Learning Disabilities International Conference, Chicago Illinois, March, 1982.

Presentation of Task Force Materials. International Reading Association Annual Convention, Chicago, Illinois, April, 1982.

LD Efficient Techniques for Teaching Reading. Bronx Organization of Learning Disabilities, Bronx, N.Y. April 1982.

Basic Reading and Spelling Task Force Research Findings and the Procedures for Designing and Teaching "LD-Efficient" Units. North Jersey Council of the International Reading Association. Paramus, N.J., October, 1982.

Basic Reading and Spelling Task Force Research Findings and the Procedures for Designing and Teaching "LD-Efficient" Units. Council for Learning Disabilities Annual Conference, Kansas City, Missouri, October, 1982.

BRSTF Research Findings and the Procedures for Designing and Teaching "LD-Efficient" Units. Orton Dyslexia Society Annual Conference, Baltimore, Md. Nov. 1982

BRSTF Research Findings and the Proc. for Designing and Teaching "LD-Efficient" Units. Council on Except. Children National Convention, Detroit, Michigan, April, 1983.

Jeannette E. Fleischner (Arithmetic)

Arithmetic Learning Disabilities: Computational Deficits. New York Association for the Learning Disabled, November 1978.

Diagnosis and Remediation of Arithmetic Learning Disorders. Association for Children with Learning Disabilities, February 1979.

Research in Mathematics Learning Disabilities. Distinguished Women in Education Lecture Series, Alpha Alpha Chapter of Delta Kappa Gamma, Virginia Commonwealth University, March 1979.

Arithmetic Disorders in Learning Disabled Children. Council for Exceptional Children, 57th Annual Meeting, April 1979.

Improving Arithmetic Skills of Learning Disabled Children, The Churchill School Conference, New York, N. Y., February 1980.

Update on Arithmetic Research. International Conference, Association for Children with Learning Disabilities, February 1980.

Identification and Treatment of Arithmetic Learning Disabilities. Eastern Long Island Association for the Learning Disabled Symposium, Southhampton, N. Y., March 1980.

Report of the Arithmetic Task Force: Research Institute for the Study of Learning Disabilities. 58th International Meeting, Council for Exceptional Children, Philadelphia, PA, April 1980.

Current Research on Learning Disabilities. Suffolk County Optometric Association Conference, Stonybrook, N. Y., October 1980.

Overview of the Research Institute for the Study of Learning Disabilities, Teachers College. Special Education Leadership Conference, Minneapolis, Minn., November 1980.

Update on Arithmetic Research. New York Association for the Learning Disabled, New York, December 1980.

Work of the Task Force. Association for Children with Learning Disabilities, Washington, D.C., 1983. (with Dr. Nuzum)

Work of the Task Force. Council for Exceptional Children, Washington, D.C., 1983.

The Staff of the Task Force presented their findings at conferences sponsored by: The Orton Society, The N.Y. Assoc. for the Learning Disabled, the N.Y. Optometric Assoc., the Spec. Ed. Leadership Conference. Assoc. for Children with Learning Disabilities, the Council for Exceptional Children, the National Council of Teachers of Mathematics, N.J. Academy of Medicine, N.Y. Assoc. for Learning Disabilities, Colorado Council for Learning Disabilities, Reading Reform Foundation, N.Y. Council of Reading Teachers, ACLD-Chicago CEC- Houston, Ontario ALD-Toronto.

Dr. Fleischner participated in a conference on Neurosciences and Education, chairing a session devoted to the neuropsychological foundations of mathematics disability. Teachers College, N.Y., N.Y., 1981.

Second Annual Colloquium on Hispanic Issues: Spec. Ed. and the Hispanic Child. Aspira Center for Educational Equity and the National Origin Desegregation Assistance Center, February, 1981 (Dr. Shepherd)

The Exceptional Bilingual Child. Council for Exceptional Children Conference, New Orleans, February 1981. (speakers: Mr. Preddy and Dr. Shepherd)
The New England Regional Bilingual Education Service Center, Providence, Rhode Island, April, 1981. (Dr. Shepherd)

Dr. Fleischner was a participant in CBS Sunrise Semester which was broadcast in August of 1982.

Walter MacGinitie (Reading Comprehension I: Semantic Recoding and Schema Applications)

The following presentations concerned the analysis of reading instructional materials:

Sociedad de Dislexia del Uruguay, Montevideo, Uruguay, September 1978.

Connecticut Association for Reading Research, Hartford, CT, October 1978.

York University, Ontario, Canada, February 1979.

Bowling Green State University, OH, April 1979.

The following presentations concerned reading comprehension and reading comprehension disabilities:

Instituto Nacional de Docencia, Montevideo, Uruguay, September 1978.

Primar Congreso Latinoamerican de Psicopedagogia, Buenos Aires, Argentina, September 1978.

Regional Reading Research Seminar, Seattle, WA, March 1979.

Bowling Green State University, OH, April 1979.

Keynote address for Portland Reading Council, Portland, OR, October 1979.

Seventh Southeast Regional Reading Conference, Nashville, TN, February 1980.

Third Northeast Regional Reading Conference, Niagara Falls, NY, March 1980.

Fourth International Colloquium in School Psychology, Jerusalem, Israel, July 1980. (with K. Maria)

Faculty of University of Victoria, B.C., Canada, November 1980.

New York Association for the Learning Disabled Conference, New York, NY. Paper presented by Mrs. Susan Kimmel, Research Assistant, December 1980.

Vancouver Island Reading Association, B.C., Canada, December 1980.

Work of the Reading Comprehension Task Force, Semantic Recoding and Schema Application, has been reported, or is scheduled to be reported, at the following meetings:

Calgary and District Council, Calgary, Alberta, Canada, June 1983.

Aurora Public Schools Reading Lecture Series, Aurora, CO, September 1983.

School District #12, Professional Day, North Glen, CO, September 1983.

Council for Learning Disabilities, San Francisco, CA, October 1983.

Reading Council of Greater Winnipeg, Winnipeg, Manitoba, Canada, October 1983.

National Reading Conference, December, 1983, Austin, Texas.(K. Maria)

Margaret Jo Shepherd (General Learning Disabilities)

Screening for Potential Learning Disabilities among Kindergarten and First Grade Children in the Public Schools in Puerto Rico. Presented at annual meeting of the Puerto Rican League for the Aid of Children with Learning Disabilities, San Juan, PR, September 1978.

Facts about Learning Disabled Children from an Educator's Perspective. Presented at the annual meeting of the New Jersey Academy of Pediatrics, November 1978.

Characteristics of Children with Learning Disabilities: An Update. A series of seven lectures presented to Learning Disability Teacher consultants in the State of New Jersey under the sponsorship of the New Jersey Department of Education, April-May 1979.

Essentials of Effective Educational Programs for Learning Disabled Children. Eastern Virginia Medical School, Norfolk, VA, November 1979.

Current Perspectives on the Nature of Specific Learning Disabilities in Children. Puerto Rican Medical Association, San Juan, PR, November 1979.

Characteristics of Children with Learning Disabilities. National Orton Society, Indianapolis, IN, November 1979.

The Effects of Training on Learning Disabled and Nondisabled Children's Use of an Organizational Strategy to Facilitate Recall. National meeting of the Association for Children with Learning Disabilities, Milwaukee, WI, February 1980.

Learning Disabled Children's Use of Cognitive Strategies on Memory Tasks. National meeting of the Council for Exceptional Children, Philadelphia, PA, April 1980.

The Effects of Training and Incentives on the Recall Performance of Learning Disabled and Nondisabled Children. Paper presented at the Fourth International School Psychology Colloquium, Jerusalem, Israel, June 1980.

New Perspectives on Memory Deficits in Learning Disabled Children. Paper presented at the Tenth Annual Conference on Leadership in Special Educations Programs, Minneapolis Public Schools, MN, November 1980.

The Use of Cognitive Strategies in Basic Computation. National Orton Society, Boston, MA, November 1980.

Update on Research of the General Learning Disabilities Task Force. New York Association for the Learning Disabled, December 1980.

Fourth International School Psychology Colloquium, Jerusalem, Israel, June 1980. (Shepherd)

First World Congress on Dyslexia, The British Psychological Association, Manchester, England, March 1982. (Shepherd and Cort)

Advanced Study Institute on Dyslexia, NATO, Maratea, Italy, October, 1982. (Shepherd and Gelzheiser)

Second World Congress on Dyslexia, The Orton Society and the International Academy for Research on Learning Disabilities, Halkidiki, Greece, June 1983. (Shepherd and Gelzheiser)

International Study Group on Special Education for Learning Disabled Children, Mayo Clinic, Rochester, Minnesota, July 1983. (Shepherd)

Seminar on Learning Disabilities Educational Testing Service, Princeton, N.J., October 1980. (Shepherd)

Annual Meeting of the Division for Children With Learning Disabilities of the Council for Exceptional Children, Denver, November, 1980. (Shepherd)

Tenth Annual Conference on Leadership in Special Education Programs, Minneapolis Public Schools, November, 1980. (Shepherd)

New York Association for the Learning Disabled, New York, December, 1980. (Cort)

Annual Symposium on Learning Disabilities Rutgers University School of Education and New Jersey Department of Education, March, 1981. (Shepherd)

Symposium Series, Reading Disabilities Institute, University of Medicine and Dentistry of New Jersey. Rutgers Medical School, April, 1981. (Shepherd)

New York Association for the Learning Disabled, Syracuse, November, 1981. (Solar and Gelzheiser)

National Association for Children and Adults with Learning Disabilities, Chicago, March 1982. (Gelzheiser)

Annual Meeting of the Puerto Rican Association for Children with Learning Disabilities, San Juan, April 1982. (Shepherd)

New York Association for the Learning Disabled, New York, January, 1983. (Shepherd, O'Loughlin and Reitzes)

National Association for Children and Adults with Learning Disabilities, Washington, D.C. February, 1983. (Shepherd, Solar and Gelzheiser)

American Educational Research Association, Montreal, Canada, April, 1983. (Gelzheiser)

Joanna P. Williams (Reading Comprehension II: Integration of Characteristics of the Text and of the Reader)

Factors Affecting Children's Ability to Detect Inappropriate Information in Paragraphs.

Council for Exceptional Children, Phildadelphia, PA, April 1980.

The American Educational Research Association, Boston, Mass. (with M. Taylor), Spring 1980.

Research-in-Progress: Reading Comprehension.

International Reading Association, St. Louis, MO, Spring 1980.

Churchill School Conference, Teachers College, N. Y., Spring 1980.

University of Texas, Austin, Fall 1979.

Rutgers University Medical School, New Jersey, Fall 1979.

International Reading Association Conference on Linguistic Awareness, University of Victoria, June 1979.

York University, Ontario, Canada, February 1979.

University of New Hampshire, March 1981 (Williams)

American Educational Research Association, April 1981. (Williams and Taylor)

St. Jerome's College, University of Waterloo, Ontario, July, 1981.(Williams)

American Psychological Association, Aug. 1981. (Williams) Los Angeles

New York City meeting of educators with the People's Republic of China, Sept. 1981. (Williams)

Results of an Instructional Study. American Educational Research Association, April 1982. N.Y.C. (Williams and Taylor)

Regional Conferences sponsored by Ginn and Co., Bloomington, Indiana and Knoxville, Tennessee, June 1982. (Williams)

Reading Reform Founation, N.Y.C. Nov. 1982. (Williams)

National Reading Conference, Dec. 1982. (Williams)

American Educational Research Association, April 1983. (Williams, Taylor and Jarin) Montreal.

Workshops and Seminars

Participation in workshops and seminars for teachers, psychologists and other professional personnel, as well as for parents has served the Institute in several ways. Through these sessions, dissemination of our research activities and findings has been strong; school/agency cooperation for data collection and field testing has been obtained; and opportunities for feedback from inservice personnel have been realized.

The following are listings of some of the workshops and seminars in which the Institute personnel have participated.

N. Dale Bryant, H.R. Fayne, M. Gettinger (Basic Reading and Spelling)

New York City Resource Room Teachers Workshop at Teachers College. Sponsored jointly with Dr. Jed Luchow and Ms. Candice Edelbaum, March 1979.

Workshop at Morrisania Day Care Center, November 1979.

Workshop for District 3, Reading Program Personnel, December 1979.

Workshop for: The New York City Resource Room Program, 2 days; The Health Conservation Classroom Teachers, 1 day, March 1980.

Workshop for Israeli Government, Jerusalem, Israel, July 1980.

In general, workshops were presented in each school where data were collected.

Teachers College, Columbia University, N.Y., N.Y., April 1981.

Language and Learning Department of St. Luke's Hospital Child Psychiatric Clinic, N.Y., N.Y. 1981.

Neuropsychologic Measures Related to Learning Problems. American Reading Forum, Sarasota, Fla., Dec. 1981.

Special Training Workshops Based on Task Force Findings. Teachers College, Columbia Univ., N.Y., N.Y., 1982.

Workshop on Neuropsychology in the Schools. T.C. May, 1983.

Jeannette Fleischner (Arithmetic)

Alleghany Intermediate Unit, Pittsburgh, Pa. Presentation to Learning Disabilities Consultants. Diagnosis and Remediation of Arithmetic Learning Disorders, May 1979.

New York City Board of Education, Workshop for Educational Evaluators, November 1980.

Workshop for Parent Group, Harborfields SEPTA, Harbor Central School District, N.J., 1980.

Workshop for School Administrators, Metropolitan School Study Council, Riverdale, N.Y. 1980.

Workshop for Learning Consultants, Bedford Central School District, N.Y., 1981.

Parent Workshop, Winston Academy, N.Y., N.Y., 1982.

Early Childhood Assessment Conference, Teachers College, Columbia University, N.Y., N.Y., 1982.

In-Service Training, Ridgewood public schools, Ridgewood, N.J., 1982.

Region VI Council for Special Education, Leonia, N.J., 1983.

NY SED - June, 1983

Walter MacGinitie (Reading Comprehension I: Semantic Recoding & Schema Applications)

Great Falls, Montana. Workshops and Presentations for Parents, Special Teachers and Administrators, October 3-4, 1979.

Portland State University, Special Workshop Seminar, October 5-6, 1979.

Holy Family School, New Rochelle, New York: Two Workshops for Teachers given by Mrs. Katherine Maria, Research Assistant (this school was a cooperating agency in our research), November 1979.

University of Victoria. Seminar for Students and Faculty, November 30, 1979..

New York City. Workshop for Language Arts Coordinators, December 14, 1979.

Margaret Jo Shepherd (General Learning Disabilities)

Characteristics of Children with Learning Disabilities. Presented at the School of Education, Catholic University, Ponce, Puerto Rico, February 1978.

Learning Disabled Children's Use of Cognitive Strategies on Memory Tasks. Parents' Association, Zionsville, In., November 1979.

Learning Disabled Children in Regular Classes. Workshop: A series of six lecture/discussion/demonstration presentations to the faculty of the North Merrick Public Schools, North Merrick, New York, February/March 1979.

Teaching Learning Disabled Children in Regular Classes. Three Workshops presented to faculty, Eastchester Public Schools, January 1980.

Shoreham, Wading River. The Learning Disabled Child in the Regular Class. One lecture, January 1980.

Staff, Child Development Institute, Hackensack Hospital, Hackensack, N.J., April, 1981. (Shepherd)

Staff, Pascack Regional School District, New Jersey, May 1981. (Shepherd)

Teachers, Ottawa, Ontario Public Shools, October 1981. (Shepherd)

Staff, New Jersey Jewish Hospital and Rehabilitation Center, Jersey City, December 1981. (Shepherd)

Teachers, St. Hilda's and St. Hugh's, New York, January 1982. (Gelzheiser, Solar and Shepherd)

Teachers, Ridgewood (NJ) Public Shools, March - April 1982. (Gelzheiser & Shepherd)

School Psychologists, School Social Workers and Visiting teachers, Public Schools, Commonwealth of Virginia, March 1982. (Shepherd)

Teachers, The Landmark School, Massachusetts, April 1982. (Solar)

Teachers, The Winston Preparatory School, New York, April 1982. (Gelzheiser)

Teachers,The Corpus Christi School, New Jersey, April 1982. (Solar)

Teachers, Eastern Junior High School, Greenwich, Connecticut, May 1982. (Gelzheiser)

Child Study Teams, Region III, Bergen County, New Jersey, April - May 1982. (Shepherd)

Pupil Personnel and Placement Team, Greenwich. (Conn.) Public Schools, June 1983. (Shepherd)

Teachers and Pshychologists, Leadership Institute on Learning Disability, St. Jerome's College of the University of Waterloo, Waterloo, Ontario July 1981; July 1982; July 1983. (Shepherd)

Joanna Williams (Reading Comprehension II: Integration of Characteristics of the Text and of the Reader)

Informal meeting and discussions with members of the staff of The Learning Research and Development Center at the University of Pittsburgh, PA, Fall 1980.

Conference in Teachers College, Columbia University, N.Y., N.Y., July 1982. (Williams)

In-service talks to teachers in Brooklyn, N.Y., and Ridgewood, N.J., Spring 1982. (Williams)

Psychology Department of New York University, November 1982. (Williams)

CONCLUSION

The goal of the Research Institute for the Study of Learning Disabilities at Teachers College, Columbia University was to identify information-processing deficits which interfere with learning disabled children's ability to acquire academic skills and to design instruction which compensates for or circumvents the deficits. Our focus has been reading, spelling, arithmetic and mathematics, and study skills. We have taken two approaches to our goal. One approach was to manipulate instruction (for example, the "LD-efficient" lessons) to circumvent information-processing deficits experienced by learning disabled children. The other was to teach learning disabled children more efficient and effective information-processing strategies (for example, the memory strategy training lessons). The results of our research are represented in products of two types. First, there are technical reports, many of which have been or will be published in journals, describing differences in performance between learning disabled and non-disabled children which are relevant to instruction and to achievement in school. Some of these descriptions of the information-processing characteristics of learning disabled children should eventually contribute to a coherent definition of learning disability.

Second, the Institute has produced materials, in the form of teachers' manuals, lesson plans and instructional units, designed to improve instruction in the classroom. Unlike many instructional materials in use with learning disabled children, the effectiveness

of these materials has been demonstrated. The Institute's materials include: a manual for teaching reading (#1); a manual for teaching spelling (#2); manuals for teaching arithmetic computation (#'s 3, 4, 5, and 6) and problem solving (#7). Materials also include lessons for teaching study skills (technical reports #20 and #31) and lessons for teaching children how to identify the main idea in expository paragraphs (technical report #25). Finally, there is INPUT, a screening procedure to detect children with poor reading comprehension strategies (technical report #30).

Over and over again, in study after study, we have demonstrated that learning disabled children can learn. Appropriate instruction reduces the achievement discrepancies between learning disabled and nondisabled children. We have produced several demonstrations and some models of appropriate instruction for learning disabled children.

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